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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/675,400	09/30/2003	Min-ho Kim	5649-1124	6506

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EXAMINER	
AHN, SAM K	
ART UNIT	**PAPER NUMBER**
2611	
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10/16/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No.	Applicant(s)
	10/675,400	KIM ET AL.
	Examiner	Art Unit
	Sam K. Ahn	2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 September 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20 and 22-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1-14 and 22-32* is/are allowed.

6)☒ Claim(s) *15,16 and 20* is/are rejected.

7)☒ Claim(s) *17-19* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application.
6) ☐ Other: _____

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DETAILED ACTION

Response to Arguments

1. Applicant's arguments, see p.12-13, filed 09/04/07, with respect to rejection of claims 1,10,22 and 29 have been fully considered and are persuasive. The rejection of claims 1,10,22 and 29 has been withdrawn. Therefore, the claims depending on these claims have also been withdrawn. Ninomiya1 in view of Ninomiya2 do not teach wherein the complex output signal includes error reference signal wherein the error reference signal comprises at least one PN signal in a field synchronization signal of the complex input signal and wherein the PN signal is one of a plurality of PN signals, and wherein error detecting unit determines location of a PN signal of an error reference signal in a complex output signal based on a real part of the complex output signal, and that generates a frequency signal based on the determined location of the PN signal of the error reference signal in the complex output signal.
2. Applicant's arguments filed 09/04/07 have been fully considered but they are not persuasive. The applicants have not made any comment or argument in regards to claims 15,16 and 20. The argument made on pages 12-14 is only related to the amended limitations on claim 1.10,22 and 29, however, has no relation to claims 15,16 and 20.

 Regarding claim 15, Ninomiya1 teaches wherein the error detecting unit (elements 116,105) comprises: a field synchronization detector (element 103) that is configured to determine location of a beginning and an end of the error reference signal based on the real part of the output signal (note c.3, l.30-35); and a frequency error

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measuring unit that is configured to measure a variation in a phase angle of the output signal based on the location of the beginning and the end of the error reference signal that is determined by the field synchronization detector, and is configured to generate the error signal based on the variation in the phase angle of the output signal (element 105 determining the phase error from signal Segst 109). And although Ninomiya1 teaches the input and output signals are complex signals, such complex signals are well-known to one skilled in the art.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement as such. Applicant has not disclosed that the complex signal provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with other signal formats such as in polar form because complex or polar form does not provide any different result, but merely differ in computation. Therefore, it would have been obvious to one of ordinary skill in this art to modify the teaching of Ninomiya1 and provide signals in complex format to obtain the invention as specified in the claim.

Regarding claim 16, Ninomiya1 further teaches wherein the complex output signal is divided into frames (see Figs.5 and 6), and wherein the frequency error measuring unit is configured to generate the error signal for each of the frames of the complex output signal (element 105 continuously determining the phase error from signal Segst 109 when signals with frames are received).

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Regarding claim 20, Ninomiya1 further teaches wherein the complex input signal is a VSB signal that is represented as a complex number, and wherein the error reference signal is a PN63 signal in a field synchronization signal of the complex input signal (see explanation in claim 10 for complex number and note c.1, l.10 for VSB signal, and further wherein PN63 signal is further shown in Fig.6).

Therefore, the examiner maintains the rejection on claims 15,16 and 20.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claims 15,16 and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ninomiya et al. US 6,967,694 B1 (hereinafter, Ninomiya1).

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Regarding claim 15, Ninomiya1 teaches wherein the error detecting unit (elements 116,105) comprises: a field synchronization detector (element 103) that is configured to determine location of a beginning and an end of the error reference signal based on the real part of the output signal (note c.3, l.30-35); and a frequency error measuring unit that is configured to measure a variation in a phase angle of the output signal based on the location of the beginning and the end of the error reference signal that is determined by the field synchronization detector, and is configured to generate the error signal based on the variation in the phase angle of the output signal (element 105 determining the phase error from signal Segst 109).

And although Ninomiya1 teaches the input and output signals are complex signals, such complex signals are well-known to one skilled in the art.

At the time of the invention, it would have been obvious to a person of ordinary skill in the art to implement as such. Applicant has not disclosed that the complex signal provides an advantage, is used for a particular purpose or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with other signal formats such as in polar form because complex or polar form does not provide any different result, but merely differ in computation. Therefore, it would have been obvious to one of ordinary skill in this art to modify the teaching of Ninomiya1 and provide signals in complex format to obtain the invention as specified in the claim.

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Regarding claim 16, Ninomiya1 further teaches wherein the complex output signal is divided into frames (see Figs.5 and 6), and wherein the frequency error measuring unit is configured to generate the error signal for each of the frames of the complex output signal (element 105 continuously determining the phase error from signal Segst 109 when signals with frames are received).

Regarding claim 20, Ninomiya1 further teaches wherein the complex input signal is a VSB signal that is represented as a complex number, and wherein the error reference signal is a PN63 signal in a field synchronization signal of the complex input signal (see explanation in claim 10 for complex number and note c.1, l.10 for VSB signal, and further wherein PN63 signal is further shown in Fig.6).

Allowable Subject Matter

4. Claims 1-14 and 22-32 are allowed.

5. Claims 17-19 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter: present application discloses a method and an apparatus of a system receiving a signal wherein the signal carries synchronization pattern and determining phase and frequency errors based on the synchronization pattern. Prior art teaches all the

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limitations claimed, however, prior art does not explicitly teach wherein the complex output signal includes error reference signal wherein the error reference signal comprises at least one PN signal in a field synchronization signal of the complex input signal and wherein the PN signal is one of a plurality of PN signals, and wherein error detecting unit determines location of a PN signal of an error reference signal in a complex output signal based on a real part of the complex output signal, and that generates a frequency signal based on the determined location of the PN signal of the error reference signal in the complex output signal.

Conclusion

7. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sam Ahn whose telephone number is (571) 272-3044. The examiner can normally be reached on Monday-Friday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Sam K. Ahn
Patent Examiner

10/9/07